

Optimizing constructed wetland design, management and performance prediction

Project B3:
Constructed Wetlands

This project will inform revisions to guidelines and practice for wetland planning, design & construction, modelling and maintenance; as well as informing investment policy in wetland construction and renewals.

Melbourne Water has over 200 constructed wetland systems across the region. These wetlands represent perhaps the biggest single investment of Melbourne Water and its partners with the aim of improving stormwater quality.

In recent years, there have been major concerns about the long-term performance and sustainability of these wetlands. This project aims to inform revisions to guidelines and practice for wetland (i) planning (ii) design and construction, (iii) modelling and (iv) maintenance, and to inform policy regarding investments in wetland constructions and renewals. This includes answering the question as to which stormwater control measures provide the greatest community benefit relative to cost.

Methods

The proposed approach is constructed around the conceptual framework in Figure 1. The project is centred around development of a reliable set of performance indicators which can reliably pre-

dict treatment performance and have a clear relationship to the design and operational factors that drive performance. Establishing this "chain of influence" will allow development of optimisation algorithms, which can be automated, using Real-Time-Control (RTC) technology.

The first year of the project will focus on the development of indicators. A range of indicators will be explored and tested for use as cost-effective surrogates of hydrological and pollutant load reduction performance, drawing on the existing wetland performance data collected by Melbourne Water, including the logged water level data and vegetation cover data.

Outcomes

- Improved operation of wetlands, facilitating the maximum treatment performance.
- Improved planning, design, modelling, construction and maintenance guidelines

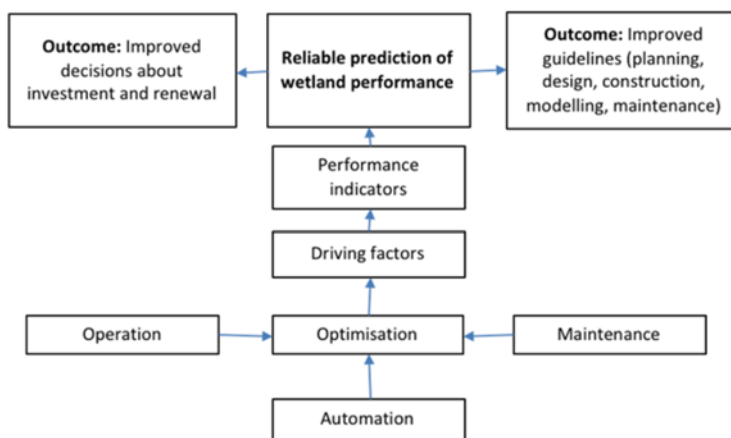


Figure 1. Conceptual framework underpinning Project B3

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